

### Listing of Claims

1. (Previously Presented) A method for treating  
5 polychlorinated biphenyl (PCB) contaminated media  
comprising the steps of:  
a) combining said media with a fluid containing one or  
more liquid hydrocarbons to form a media/fluid  
mixture;  
10 b) sonicating said mixture at audio frequency to  
extract PCB from the media into the fluid; and  
c) treating said fluid with molten sodium-containing  
alkali metal.
- 15 2. (Currently Amended) The method of claim 1 including  
the additional steps of heating said ~~slurry~~  
media/fluid mixture prior to and during said  
sonicating step.
- 20 3. (Original) The method of claim 1 wherein said media is  
soil.
4. (Currently Amended) The method of claim 1 wherein said  
media is ballast residue ~~such as tar or pitch~~.

5. (Original) The method of claim 1 wherein said fluid contains a mixture of water and one or more liquid hydrocarbons.

5 6. (Original) The method of claim 1 wherein said liquid hydrocarbons include kerosene.

7. (Original) The method of claim 1 including the additional step of reducing the particle size of said media prior to said combining step, said reducing step being one or more of sieving, comminuting and pulverizing said media.

8. (Original) The method of claim 1 including the additional step of air-drying said media prior to said combining step.

9. (Original) The method of claim 1 wherein said treatment step takes place during said sonication step and said sonication step occurs at a temperature sufficient to melt said sodium-containing alkali metal.

10. (Original) The method of claim 9 wherein said sonication step occurs in a sealed vessel with a vent to release gas during sonication.

11. (Original) The method of claim 9 wherein said  
sonication step occurs in a vessel with one or more  
inlets and outlets able to transfer said media/fluid  
mixture between said vessel and a pump-equipped  
reservoir.

12. (Currently Amended) The method of claim 11 wherein  
said sonication step further includes using inert gas  
to purge the head space of said reservoir and said  
~~sonication~~ vessel.

13. (Currently Amended) The method of claim 11 further  
including the step of ~~transferring~~ decanting said  
sonicated media/fluid mixture ~~of from one of said~~  
~~sonication vessel and said reservoir to a settling~~  
~~tank~~ to separate sonicated ~~liquid~~ fluid and sonicated  
media.

14. (Original) The method of claim 13 including an  
additional step of sonicating said separated sonicated  
fluid in the presence of sodium containing alkali  
metal and at a temperature sufficient to melt sodium  
containing alkali metal.

15. (Original) The method of claim 13 including the additional step of treating said separated sonicated media with water in a flotation cell to dislodge residual PCB-containing hydrocarbon liquid and froth from said separated sonicated media.

16. (Currently Amended) The method of claim 15 wherein said flotation cell treated ~~soil~~ media is recycled to the environment.

17. (Canceled)

18. (Original) The method of claim 15 wherein said froth is recycled and used as part of said fluid in said method.

19. (Currently Amended) The method of claim 15 wherein said ~~floatation~~ flotation cell includes a frothing agent.

20. (Currently Amended) The method of claim 15 wherein said ~~floatation~~ flotation cell includes pH adjustment with sodium carbonate.

21. (Original) The method of claim 1 wherein said sonication step includes the addition of lime to said mixture.

22. (Currently Amended) The method of claim 21, wherein  
said sonication step is repeated using ~~said~~ lime-  
sonicated media and a sodium-containing alkali metal  
5 at a temperature sufficient to melt sodium.

23. (Original) The method of claim 22 wherein said  
sonication steps occur in a sealed vessel able to be  
vented to release gas during sonication.

10 24. (Original) The method of claim 14 wherein said treated  
separated sonicated fluid is recycled for use as said  
fluid in said method.

15 25. (Original) The method of claim 1 wherein said  
sonicating step uses sonication equipment without  
grinding media.

20 26. (Currently Amended) The method of claim 1, wherein  
said sonicating step occurs ~~inat~~ at a temperature ~~range~~  
~~of~~ greater than 98 ~~100-120~~ °C.

25 27. (Original) The method of claim 5, wherein said  
sonicating step occurs in a temperature range of 80-  
98°C.

30 28. (Currently Amended) The method of claim 1, wherein  
said sonicating step uses a resonating probe  
contacting said ~~fluid~~ mixture.

29. (Original) The method of claim 1, wherein said sonicating step takes place in one or more chambers mounted axially to a resonating member.

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30. (Canceled)

31. (Original) The method according to claim 4, wherein said sonicating step occurs at a ~~minimum of~~ temperature greater than 98 100°C.

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32. (Currently Amended) The method according to claim 1, wherein said sodium-containing alkali metal is ~~commercially pure sodium metal~~.

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33. (Currently Amended) An apparatus for treating polychlorinated biphenyl (PCB) contaminated media, comprising:

- 20 a) a reaction vessel for holding a mixture of said media, a liquid hydrocarbon-containing fluid, and a molten sodium-containing alkali metal, said reaction vessel having vents to release gas during sonication;
- 25 b) an audio frequency sonicator without grinding media for sonicating said mixture at an audio frequency; and
- c) a heater for controlling the temperature of said mixture and maintaining said molten sodium-containing alkali metal in a molten state, said heater having an operating range with an upper limit at least equal to
- 30 a temperature of molten sodium.

34. (Original) The apparatus of claim 33, wherein said sonicator uses a resonating probe contacting said mixture.

5 35. (Original) The apparatus of claim 33, wherein said reaction vessel consists of one or more chambers mounted axially to a resonating member of said sonicator.

10 36. (Canceled)

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